APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,048	04/19/2004	Jun Xu	CIS0214US	2387

			EXAMINER
33031	7590	08/18/2006	CHOI, WOO H

CAMPBELL STEPHENSON ASCOLESE, LLP
4807 SPICEWOOD SPRINGS RD.
BLDG. 4, SUITE 201
AUSTIN, TX 78759

ART UNIT	PAPER NUMBER
2189	

DATE MAILED: 08/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)
Office Action Summary		10/827,048	XU ET AL.
		Examiner	Art Unit	
		Woo H. Choi	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/18/05, 4/19/05*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   Claims 28 – 40 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. The claimed computer readable medium encompasses

communications medium conveying signals, which are non-statutory.

Claim Rejections - 35 USC § 102

3.   Claims 1, 2, 4, 5, 9, 14, 16, 18, 28, 29, 31, 32, 41, and 43, are rejected under 35

U.S.C. 102(b) as being anticipated by Kolawa et al. (US Patent No. 5,842,019).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis

for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.   With respect to claims 1, 4, 6, 14, 15, 18, 20, 28, 31, 33, 41, and 43, Kolawa discloses a

method comprising:

selecting a first allocated memory block from a plurality of allocated memory blocks, wherein the first allocated memory block includes a first allocated memory block address (figure 7);

searching other allocated memory blocks of the plurality of allocated memory blocks for a reference to the first allocated memory block (figure 9, 90);

verifying that the first allocated memory block is a memory leak when the reference to the first allocated memory block is not found in the other allocated memory blocks of the plurality of allocated memory blocks (93); and

reporting the first allocated memory block as a memory leak (93).

5.   With respect to claims 2, 16, and 29, the selecting the first allocated memory block from the plurality of allocated memory blocks further comprises:

selecting the first allocated memory block address from operating system memory management information (memory allocations are done by calls to operating system memory manager, therefore, allocated memory block addresses are from OS memory management information).

6.   With respect to claims 5, 9, and 32, the method further comprises:

examining a reference counter corresponding to the first allocated memory block (figure 7, 74).

7.   With respect to claims 6, 20, and 33, the verifying that the first allocated memory block

is a memory leak further comprises:

        determining whether the first allocated memory block has been deallocated (figure 7, 74,

if the reference count is not zero, the block hasn't been deallocated).

8.   With respect to claim 15, see figure 1. At least some kind of data structure and interfaces

are required for the debugging system to perform its function.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

9.   Claims 3, 7, 8, 17, 21, 22, 30, 34, 35, and 42 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kolawa in view of Abashkevich et al. (US Patent Application Pub. No.

2004/0221120, hereinafter "Abrashkevich").

10.   With respect to claims 3, 7, 17, 21, 30, 34, and 42, Kolawa discloses all of the limitations

of the parent claims as discussed above. However, Kolawa does not specifically disclose that

each of the allocated memory blocks includes a header portion. On the other hand,

Abrashkevich specifically discloses that in many of methods used by a typical memory manager,

each memory block contains hidden header fields with control information (e.g., size, tags/flags, links to other blocks, etc...) (Abrashkevich, page 1, paragraph 3). It would have been obvious to one of ordinary skill in the art, having the teachings of Kolawa and Abrashkevich before him at the time the invention was made, to use the hidden header fields to search for references to other blocks, because header portion is where such information is stored in a typical system.

11.   With respect to claims 8, 22, and 35, Kolawa discloses all of the limitations of the parent claims as discussed above. However, Kolawa does not specifically disclose that verifying that the first allocated memory block is a memory leak further comprises examining free block memory management information maintained by an operating system. On the other hand, Abrashkevich specifically discloses a method of examining free block memory management information maintained by an operating system to very memory leak (Abrashkevich, paragraph 74, a list of allocated blocks which supposed to be freed is examined to identify leaks). It would have been obvious to one of ordinary skill in the art, having the teachings of Kolawa and Abrashkevich before him at the time the invention was made, to use the defensive heap memory management teachings of Abrashkevich in the system of Kolawa, in order to provide a general-purpose memory allocator having emphasis on efficiency, high level of safety and flexibility, built-in defensive mechanism, and reliable memory error detection (Abrashkevich, paragraph 5).

12.   Claims 9 – 13, 23 – 27, 35 – 36, and 44 – 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolawa in view of Cantrill (US Patent No. 6,523,141).

13.   With respect to claims 9, 10, 23, 24, 35, 36, and 44, Kolawa discloses all of the

limitations of the parent claims as discussed above. Kolawa also discloses that memory leaks are

reported. However, Kolawa does not specifically what information is included in the report. On

the other hand, Cantrill specifically discloses a debugger that reports the identity of the call-sites

or functions (i.e., process ID or name) which leaked memory (col. 5, lines 44 – 53). Collection

and display of leak information requires storage of information in a data structure. It would have

been obvious obvious to one of ordinary skill in the art, having the teachings of Kolawa and

Cantrill before him at the time the invention was made, to use the debugger of Cantrill in the

system of Kolawa, to be able to debug or trouble-shoot software bugs.

14.   With respect to claims 11 – 13, 25 – 27, 38 – 40, and 45 – 47, the claimed contingency

chain is disclosed in figures 4A and 4B. It would have been obvious to one of ordinary skill in

the art, having the teachings of Kolawa and Cantrill before him at the time the invention was

made, to enhance Kolawa's memory leak detection method by adapting and including Cantrill's

memory leak detection method, to effectively identify and correct infrequent and small memory

leaks (Catrill, col. 2, lines 44 – 48).

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Woo H. Choi whose telephone number is (571) 272-4179. The

examiner can normally be reached on M-F, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Reginald Bragdon can be reached on (571) 272-4204. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Woo H. Choi
August 16, 2006